Work Order ID 50681

July 21, 2009 8:32:34 AM

Item ID: D212-664-207TRN **Accept** **Setup Start**

Revision ID: A **Stop**

Item Name: Crosstube Turning Detail

Start Date: 07/21/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 07/31/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** MF **Date:** 09-07-21 **Tooling:** **Date:** **Run Start**

QC: **Date:** **SPC (Y/N):** **Date:** **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr D212-664-247	**Revision Nbr** Rev A								
100		0.00							
Mori Seiki	MORI SEIKI CNC LATHE LARGE					1			
Mori Seiki CNC Lathe Large	**Memo** 1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA706□2-Turn first side as per Folio FA706□3- File transition lines smooth.	0.00							
	ark/SA 09/07/28								
110	QC1- Inspect dimensions to dimension sheet	0.00							
QC	**Memo**	0.00				1			
Quality Control	ark/SA 09/07/28								
120		0.00							
Mori Seiki	MORI SEIKI CNC LATHE LARGE					1			
Mori Seiki CNC Lathe Large	**Memo** 1-Turn second side as per Folio FA706□2- File transition lines smooth.□3- Remove sand and plugs	0.00							
	ark 09/07/28								

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

QA: N/C Closed: _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 50681

July 21, 2009 8:32:34 AM

Item ID: D212-664-207TRN
Revision ID: A
Item Name: Crosstube Turning Detail
Start Date: 07/21/2009 **Start Qty:** 1.00
Required Date: 07/31/2009 **Req'd Qty:** 1.00
Reference:

Accept **Setup Start** **Stop**

Cust Item ID:
Customer:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC1- Inspect dimensions to dimension sheet	0.00				1			
QC	**Memo**	0.00 ark 09/07/28							
Quality Control									
140	QC8- Inspect parts - second check	0.00				(0)	0		
QC	**Memo**	0.00 => 8 09/07/28							
Quality Control									
150	Crosstubes Chemical Conversion	0.00				1	0	—	AWM 9-7-29
HandFXtube	**Memo**	0.00							
Hand Finishing Crosstubes									

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

QA: N/C Closed: _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

July 21, 2009 8:32:34 AM

Work Order ID: 50681

Parent Item: D212-664-207TRNRevA

Parent Item Name: Crosstube Turning Detail

Start Date: 07/21/2009 **Required Date:** 07/31/2009

Comments:

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D6008-132RevA		Manufactured	No			110	Each	20.0000	1.0000			

Crosstube extrusion

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
LG	20	
38340	20	

1 SA 09/01/

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

QA: N/C Closed: _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	50681
Description: Crosstube Assembly (205/212 Low Aft)	Part Number:	D212-664-247
Inspection Dwg: D212-664-247 **Rev:** A		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

[X] First Article [ ] Prototype

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.438	+/-0.010	.438	✓			
	2.680	+0.005/-0.000	2.682	✓			
	2.680	+0.005/-0.000	2.684	✓			
	2.687	+0.005/-0.000	2.691	✓			
	2.802	+0.005/-0.000	2.806	✓			
	2.906	+0.005/-0.000	2.909	✓			
	3.009	+0.005/-0.000	3.018	✓			
	3.112	+0.005/-0.000	3.115	✓			
	3.250	+0.005/-0.000	3.249		✓		mtl stock extension
SIDE B	0.438	+/-0.010	.438	✓			
	2.680	+0.005/-0.000	2.684	✓			
	2.680	+0.005/-0.000	2.685	✓			
	2.687	+0.005/-0.000	2.692	✓			
	2.802	+0.005/-0.000	2.807	✓			
	2.906	+0.005/-0.000	2.909	✓			
	3.009	+0.005/-0.000	3.009	✓			
	3.112	+0.005/-0.000	3.116	✓			
	3.250	+0.005/-0.000	~~3.256~~ 3.250	✓	✓		mtl stock
	128.27	+/-0.030	128.300	✓			

Measured by:		Audited by:		Prototype Approval:	N/A
Date:	09/07/28	Date:	09/09/08	Date:	N/A

Rev	Date	Change		Revised by	Approved
A	08.11.07	New Issue	(P/O D212-664-207)	KJ/EC	

PARTS LIST:

Qty	Part Number	Description
X	D212-664-247	CROSSTUBE ASSEMBLY (205/212 LOW AFT)
1	D6008-132	CROSSTUBE
2	D2940-1	SUPPORT
4	D3595-063-530	RUBBER CUSHION
2	D3660-1	CUFF
4	MS21920-28	CLAMP (OR MS21920-30)
44	CR3212-4-06	RIVET (OR M7885/3-4-06)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

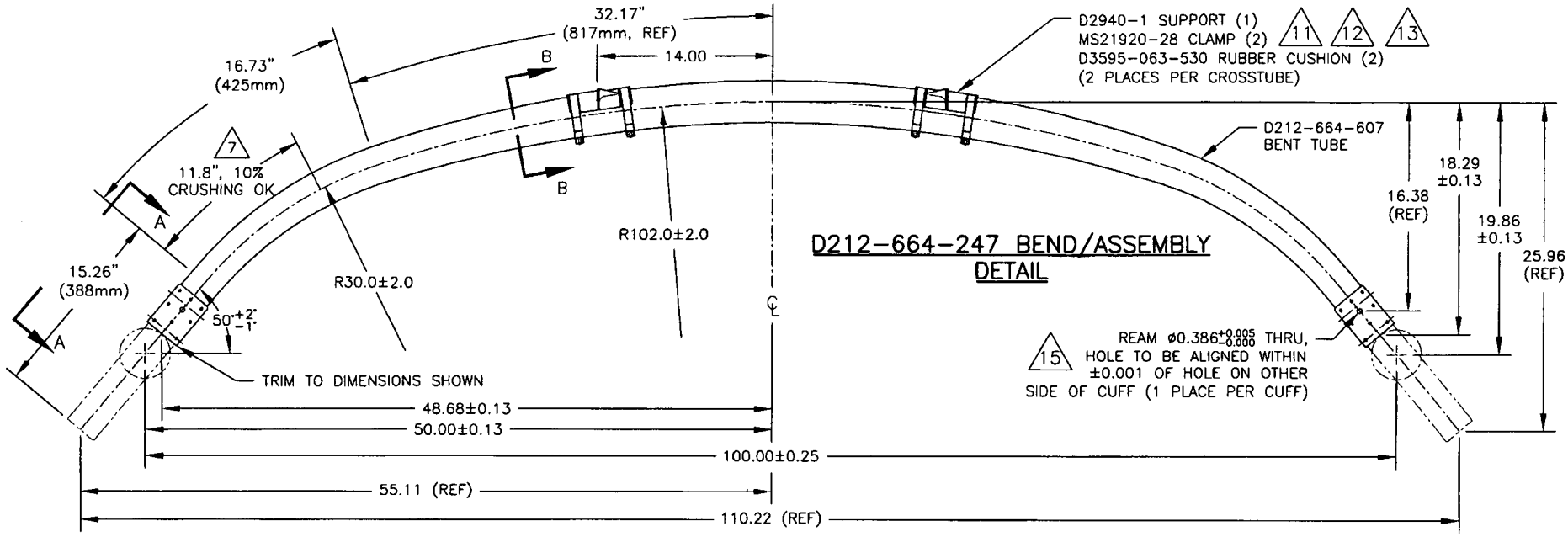
1) MATERIAL: MANUFACTURED FROM D6008-132
   FINISHED LENGTH = 128.27±0.020 (BEFORE BENDING/TRIMMING)
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
   PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
   PAINT OUTSIDE PER DART 005 4.2
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
4) ALL DIMENSIONS ARE IN INCHES
5) PART IS SYMMETRIC ABOUT CENTERLINE.
6) WHEN MACHINING TAPER, RUN-OFF PART AT STOCK. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
7) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
8) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
9) SCRIBE DART PART NUMBER AND BATCH NUMBER ON INNER SURFACE OF TUBE WITH A VIBRATING STYLUS.
10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
12) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
13) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
14) INSTALL D3660-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
15) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

50681

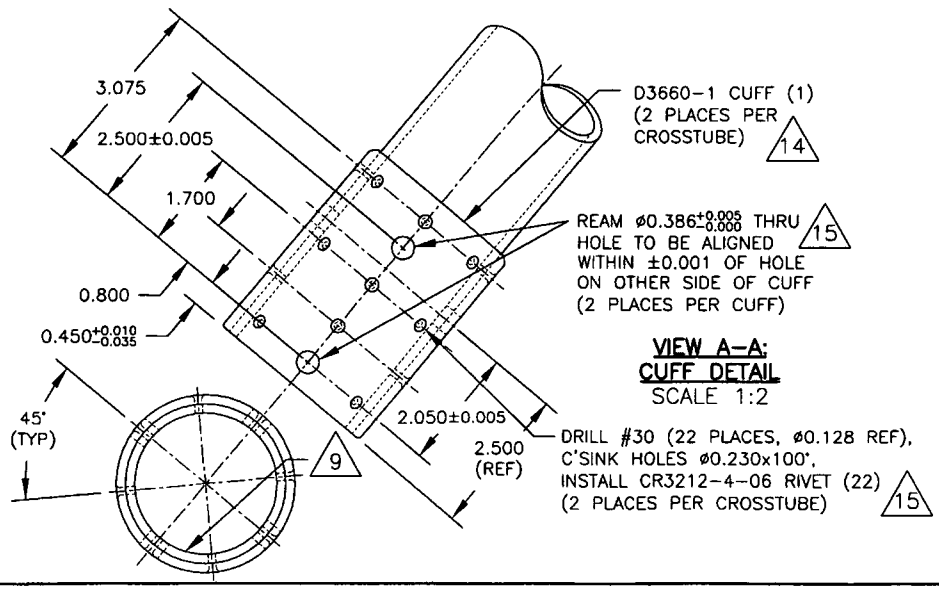
DEO ATTACHED

RELEASED 07.09.24

A	07.07.07	NEW ISSUE	
DESIGN: GP	DRAWN BY: GP	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA	
CHECKED: PH	APPROVED: H	DRAWING NO. D212-664-247	REV. A SHEET 1 OF 3
DATE: 07.07.07		TITLE: CROSSTUBE (205/212 LOW AFT)	SCALE: NTS



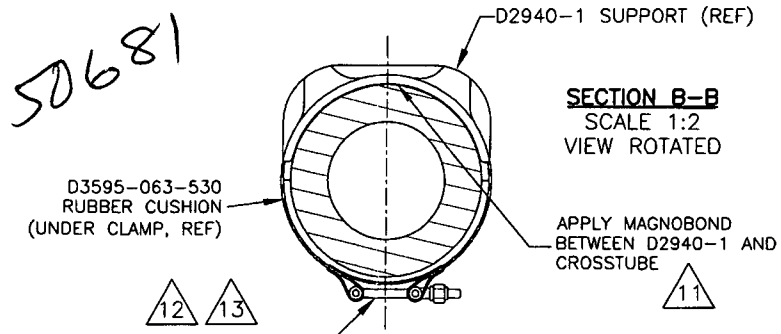
D212-664-247 BEND/ASSEMBLY DETAIL



VIEW A-A: CUFF DETAIL

SCALE 1:2

50681



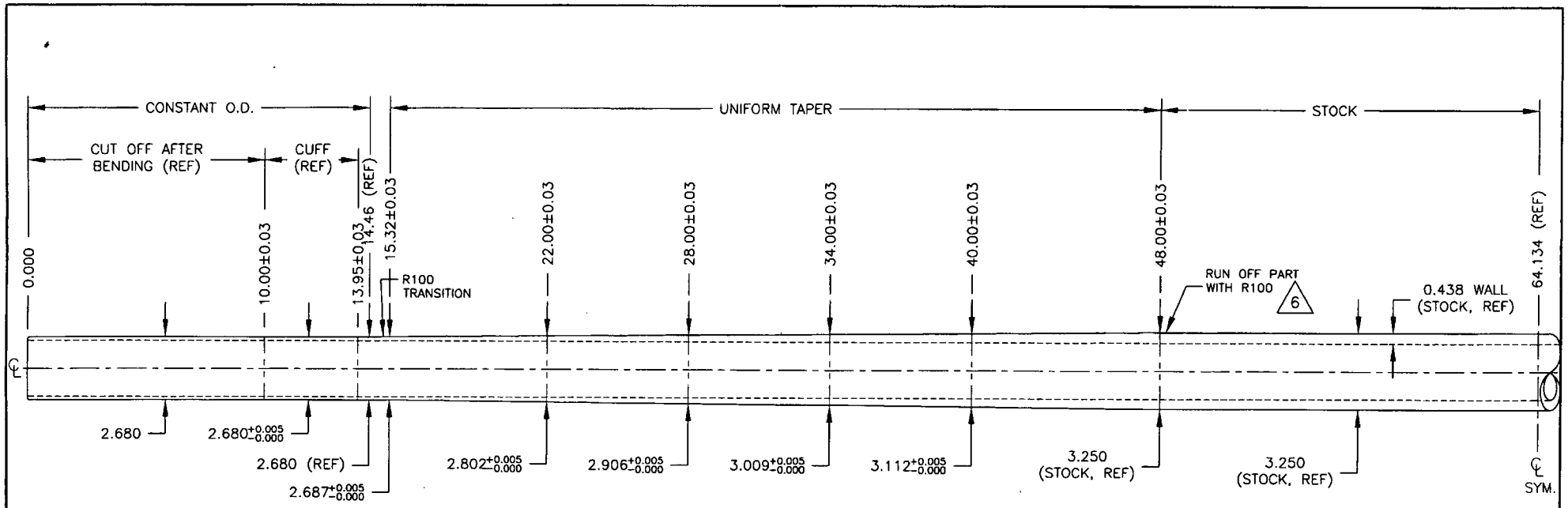
SECTION B-B

SCALE 1:2

VIEW ROTATED

DEO ATTACHED RELEASED 07.09.24

DESIGN	DRAWN BY	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED RH	APPROVED	DRAWING NO. D212-664-247 REV. A
DATE 07.07.07		SHEET 2 OF 3
		TITLE CROSSTUBE (205/212 LOW AFT) SCALE 1:8



D212-664-247 MACHINING DETAIL

RELEASED 07.09.24

DEO ATTACHED

50681

DESIGN	DRAWN BY	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D212-664-247	REV. A
DATE 07.07.07		TITLE CROSSTUBE (205/212 LOW AFT)	SHEET 3 OF 3
			SCALE 1:4

DRAWING NO.	TITLE	REV.	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D212-664-247	CROSSTUBE	A	ENGINEERING ORDER	D212-664-247-A-1	SHEET 1 OF 1	NTS

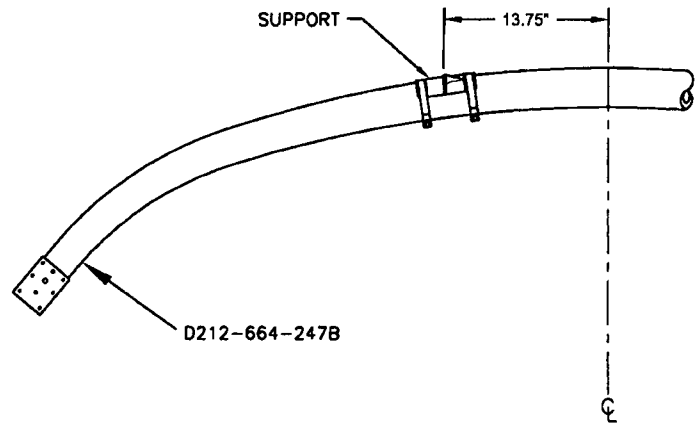
DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.
DATE 09.05.01	DATE 09.06.15	DATE 09/06/22	DATE 09/08/22	DATE 09.06.22

CHANGE:
ADD THE FOLLOWING CROSSTUBE ASSEMBLY:

Part Number	Description
D212-664-247B	CROSSTUBE ASSEMBLY (214 LOW AFT)

THE D212-664-247B CROSSTUBE HAS THE SAME PARTS LIST AS THE D212-664-247 CROSSTUBE. HOWEVER, INSTALL THE SUPPORTS AS SHOWN IN FIGURE 1 OF THIS ENGINEERING ORDER. THE NEW KIT IS OTHERWISE ASSEMBLED PER THE D212-664-247 CROSSTUBE.

RELEASED
09/06/22



50681

FIGURE 1 - SUPPORT INSTALLATION